XR-2390

SERVICE MANUAL

US Model
Canadian Model

Model Name Using Similar Mechanism	XR-2100
Tape Transport Mechanism Type	MG-36SHJ-32

SPECIFICATIONS

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION
7 watts per channel minimum continuous average power into 4 ohms, 4 channels driven from 20 Hz to 20 kHz with no more than 1% total harmonic distortion.

Other Specifications

Tuner section

FM

Tuning range	87.5 – 107.9 MHz
Antenna terminal	External antenna connector/Power antenna relay control lead
Usable sensitivity	13 dBf (75 ohms)
Selectivity	more than 70 dB at 400 kHz
Signal-to-noise ratio	65 dB (stereo), 67 dB (monaural)
Harmonic distortion at 1 kHz	0.9% (stereo), 0.5% (monaural)
Separation	33 dB at 1 kHz
Frequency response	30 – 15,000 Hz
Capture ratio	2 dB

AM

Tuning range	530 – 1,710 kHz
Antenna terminal	External antenna connector/Power antenna relay control lead
Sensitivity	32 µV

Cassette player section

Tape track	4-track 2-channel stereo
Frequency response	40 – 15,000 Hz
Signal-to-noise ratio	55 dB with TYPE I cassettes
Wow and flutter	0.13%

Power amplifier section

Outputs	Speaker outputs (sure seal connectors)
Speaker impedance	4 – 8 ohms
Maximum power output	20 W × 4 (at 4 ohms)

General

High-cut filter	–10 dB at 10 kHz
Bass boost	+8 dB at 100 Hz
Power requirements	12 V DC car battery (negative ground)
Mounting dimensions	Approx. 178 × 50 × 140 mm (w/h/d) (7 1/8 × 2 × 5 5/8 in.)
Mass	Approx. 1.2 kg (2 lb. 10 oz.)
Accessories supplied	Mounting hardware (1 set) Power connecting cord (1)

Design and specifications subject to change without notice.

FM/AM CASSETTE CAR STEREO

SONY®

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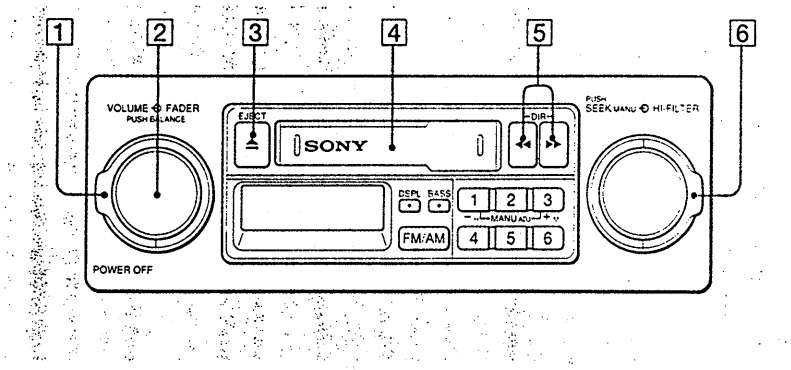
Notes on Chip Component Replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Location and Function of Controls



[1] **FADER control**
Turn clockwise to decrease the volume of the rear speakers or counterclockwise to decrease the volume of the front speakers.

[2] **POWER OFF (power on/off) switch/VOLUME/PUSH BALANCE control**

POWER OFF switch	Turn clockwise to turn on the unit and counterclockwise to turn off.
VOLUME control	Turn clockwise to increase volume and counterclockwise to decrease.
PUSH BALANCE control	Turn while pressing to adjust the balance of the left and right speakers.

[3] **EJECT button**
Press to stop the tape and take out the cassette.

[4] **Cassette insertion door**

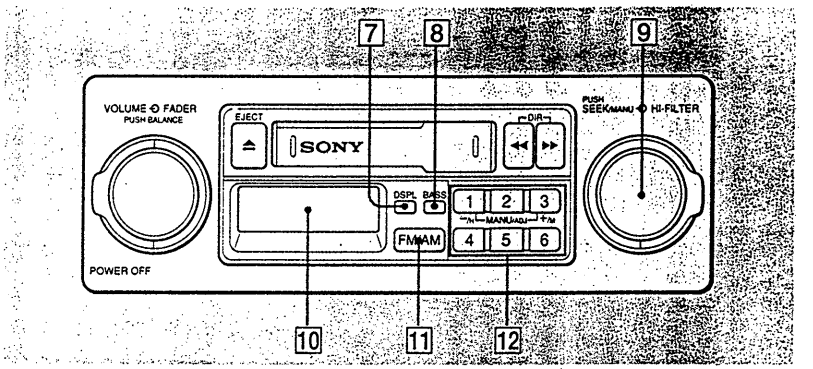
[5] **◀◀/▶▶ (fast winding)/DIR (tape transport direction change) buttons**

To listen to the other side of the cassette	Press ◀◀ and ▶▶ simultaneously.

To wind the tape rapidly		
Direction indicator	To advance	To rewind
►	Press ▶▶.	Press ◀◀.
◄	Press ◀◀.	Press ▶▶.

To resume playback, press ◀◀ or ▶▶ (that one which is not depressed) lightly.

[6] **HI-FILTER (high-cut filter)**
Turn counterclockwise to reduce the high frequency and produce a easy sound.



[7] **DSPL (display change) button**
Each time you press the button, the display modes change as follows:
Frequency ⟷ Clock

[8] **BASS (bass boost) button**
Press to reinforce bass especially when listening at low volume.
To disengage the button, press it again.

[9] **PUSH SEEK/MANU button**

PUSH SEEK button	Press for automatic tuning.
PUSH MANU button	Press the button for more than two seconds to enter the manual tuning mode, then adjust the frequencies using the preset number button [1] (−/H) or [3] (+/M).

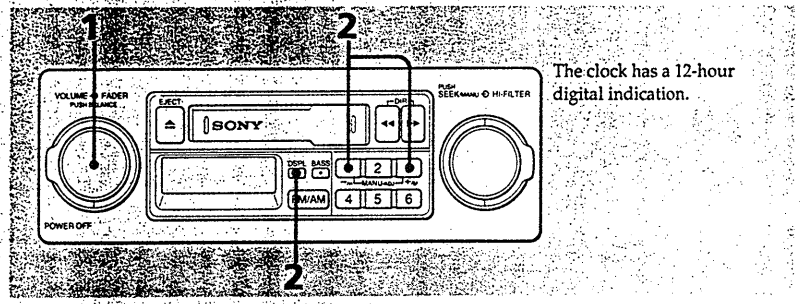
[10] **Display window**

[11] **FM/AM (band select) button**
Each time you press the button, the band changes as follows:
┌→ FM1 → FM2 → AM┐

[12] **Preset number buttons ⑨⑩**
Use the [1] (−/H) and [3] (+/M) buttons also for manual tuning and clock setting.

This section is extracted from instruction manual.

Setting the Clock



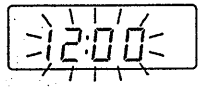
The clock has a 12-hour digital indication.

For example, to set it to 10:08.

1 Turn clockwise to turn the power on.

2 Press the DSPL button and hold it down.
The indication starts to blink after two seconds.

DSPL



With the DSPL button hold down, proceed with the following:

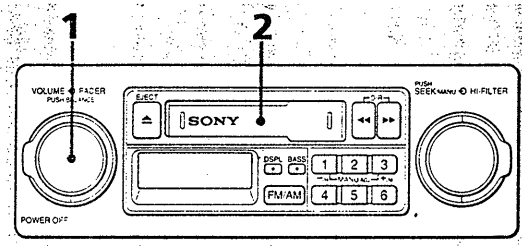
Press the [1] button to set the hour digits.

Press the [3] button to set the minute digits.

3 The clock starts activating when you take your finger off the DSPL button.

When you set minute digits "00" comes after "59". Setting the hour digits will not affect the minute digits.
When setting the minute digits, the second digits will change to "00".

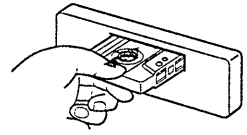
Listening to the Tape Playback



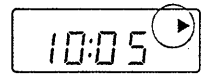
Before inserting a cassette, take up any slack in the tape with a thick pencil.

1 Turn clockwise to turn the power on.

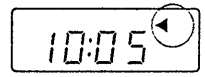
2 Insert a cassette.
Playback starts automatically.



Direction indicator



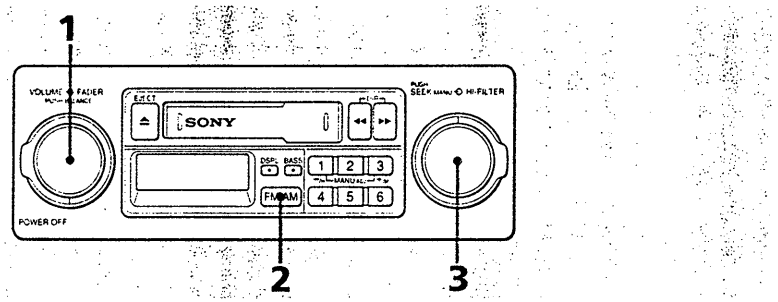
The side facing up is being played back.



The side facing down is being played back.

To stop the tape playback and listen to the radio
Press the EJECT button.
The unit enters the radio mode.

Searching for the Stations Automatically — Automatic Tuning



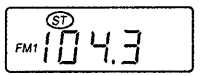
1 Turn clockwise to turn the power on.

2 Press to select the desired band, FM1, FM2, or AM.
Each time the button is pressed, the corresponding indicator appears in the display window.

FM/AM

3 Press the PUSH SEEK button.
Stations will be scanned automatically and scanning will stop when a station is tuned in. Repeat pressing the PUSH SEEK button until the desired station is tuned in.

When an FM stereo program with sufficient signal strength is tuned in

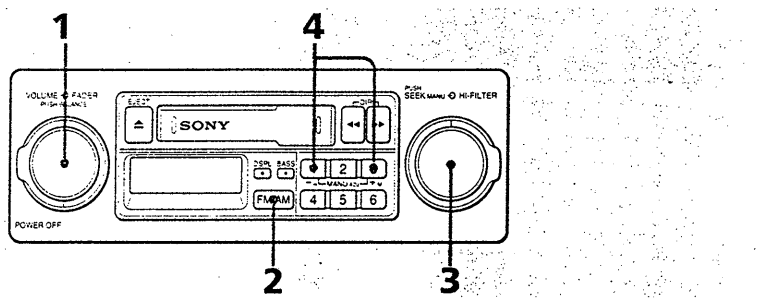


The "ST" indication appears.

To play back a cassette during radio reception
Insert a cassette. The radio will be turned off and playback will start automatically.

Tuning in by Adjusting the Frequency

— Manual Tuning



1 Turn clockwise to turn the power on.

2 Press to select the desired band, FM1, FM2, or AM.
Each time the button is pressed, the corresponding indicator appears in the display window.

FM/AM

3 Press the PUSH MANU button for more than two seconds; the sound will mute.
When the sound comes on again, the unit will be in the manual mode.

4 Press preset button 1 or 3, and adjust the frequency.

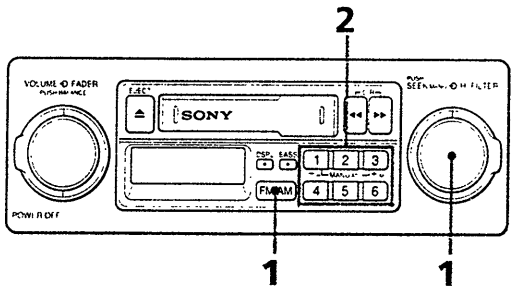
1 3
MANU/ADJ

(For lower frequencies) (For higher frequencies)

If you don't adjust within two seconds, the manual mode will be canceled

PREVENTING ACCIDENTS!
While you are driving, the use of the Automatic Tuning and the Memory Preset Tuning is recommended in favor of the Manual Tuning.

Memory Preset Tuning



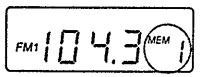
Memorizing Only the Desired Stations

1 **Tune in a desired station**
using automatic or manual tuning (see page 9).

FM/AM or 1 — 3 (MANU.ADJ)

2 **Keep the desired preset number button pressed for more than two seconds,**
until the "MEM" indication comes on.

1 — 6



The station is now memorized.

Repeat these steps for each station.

Note
The previously memorized station will be erased when you enter a new station of the same band on the same preset number button.

Receiving the Memorized Stations

1 **Press to select the desired band.**

FM/AM

2 **Press the desired preset number button.**

1 — 6

Note
If you keep pressing the preset number button for more than two seconds, the currently received station will be memorized. To receive the previously memorized station, press the preset number button lightly.

Connections/Connexions

Cautions

- This unit is designed for negative ground 12 V DC operation only.
- Before making connections, disconnect the ground terminal of the car battery to avoid short circuits.
- Connect the **yellow** and **red** power input leads only after all other leads have been connected.
- Be sure to connect the red power input lead to the positive 12 V power terminal which is energized when the ignition key is in the accessory position.
- **Run all ground wires to a common ground point.**

Attention

- Cet appareil est conçu pour fonctionner sur courant continu de 12 V avec masse négative.
- Avant d'effectuer les raccordements, débranchez la borne de terre de la batterie du véhicule pour éviter tout court-circuit.
- Raccordez les fils **jaune** et **rouge** d'alimentation uniquement après avoir réalisé toutes les autres connexions.
- Raccordez le fil d'alimentation rouge à la borne positive de 12 V qui est alimentée quand la clé de contact est sur la position accessoires.
- **Rassemblez tous les fils de terre en un point de masse commun.**

Speaker Connection

Notes on speaker connection

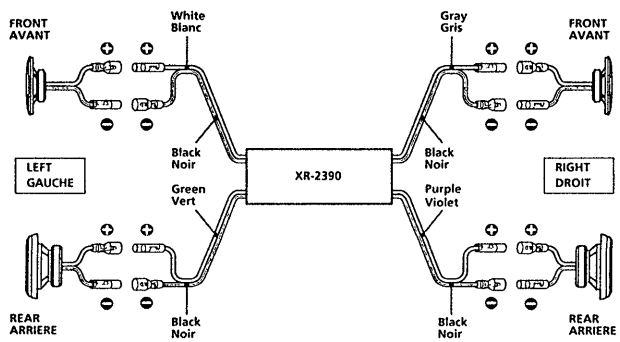
- Use speakers with an impedance of 4 to 8 ohms, and with adequate power handling capacities. Otherwise, the speakers may be damaged.
- Do not connect the terminals of the speaker system to the car chassis, and do not connect the terminals of the right speaker with those of the left speaker.
- Do not attempt to connect the speakers in parallel.

Connexion des haut-parleurs

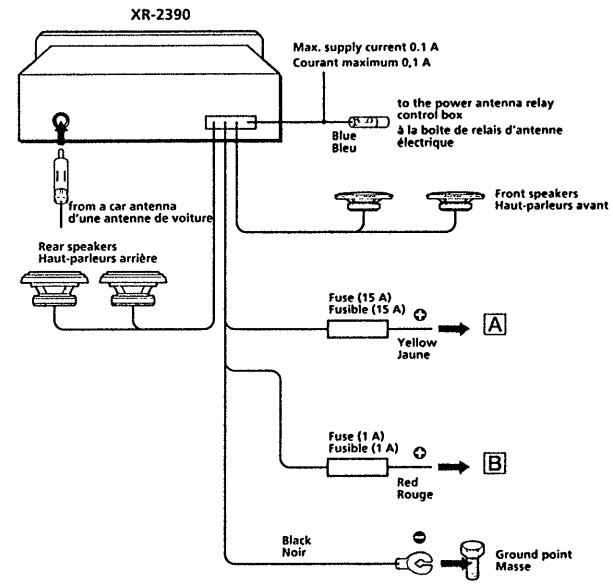
Remarques sur la connexion des haut-parleurs

- Utiliser des haut-parleurs avec une impédance de 4 à 8 ohms et qui peuvent supporter l'alimentation fournie sinon ils risquent d'être endommagés.
- Ne pas connecter les bornes du système de haut-parleur au châssis de la voiture et ne pas raccorder les bornes du haut-parleur droit aux bornes du haut-parleur gauche.
- Ne pas essayer de connecter les haut-parleurs en parallèle.

Speaker connection
Connexions de haut-parleurs



Connection Diagram — Schéma de connexion



Destination

A To the +12 V terminal which is energized at all times
B To the +12 V power terminal which is energized with the ignition key in the accessory position

Cord color

Red	Power input lead
Yellow	Power input lead
Blue	Power antenna relay control lead
Black	Ground wire

A raccorder:

A A la borne d'alimentation 12 volts positive qui est continuellement énergétisée
B A la borne d'alimentation 12 volts positive qui est énergétisée lorsque la clé de contact est sur la position accessoires

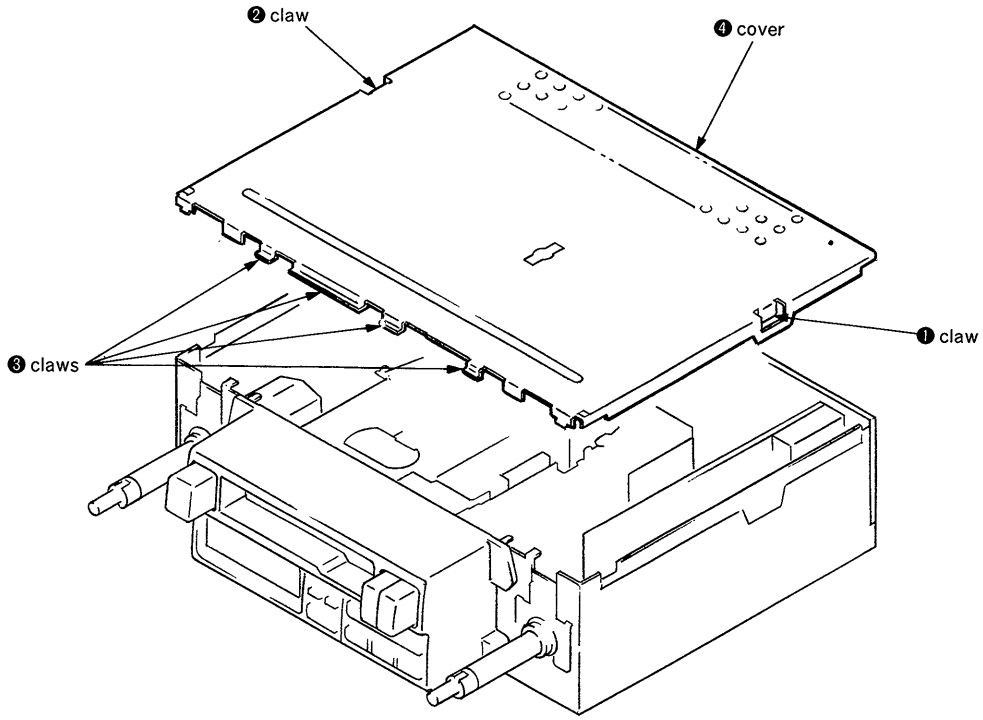
Couleur des fil

Rouge	Fil d'entrée d'alimentation
Jaune	Fil d'entrée d'alimentation
Bleu	Fil de contrôle de relais d'antenne électrique
Noir	Fil de masse

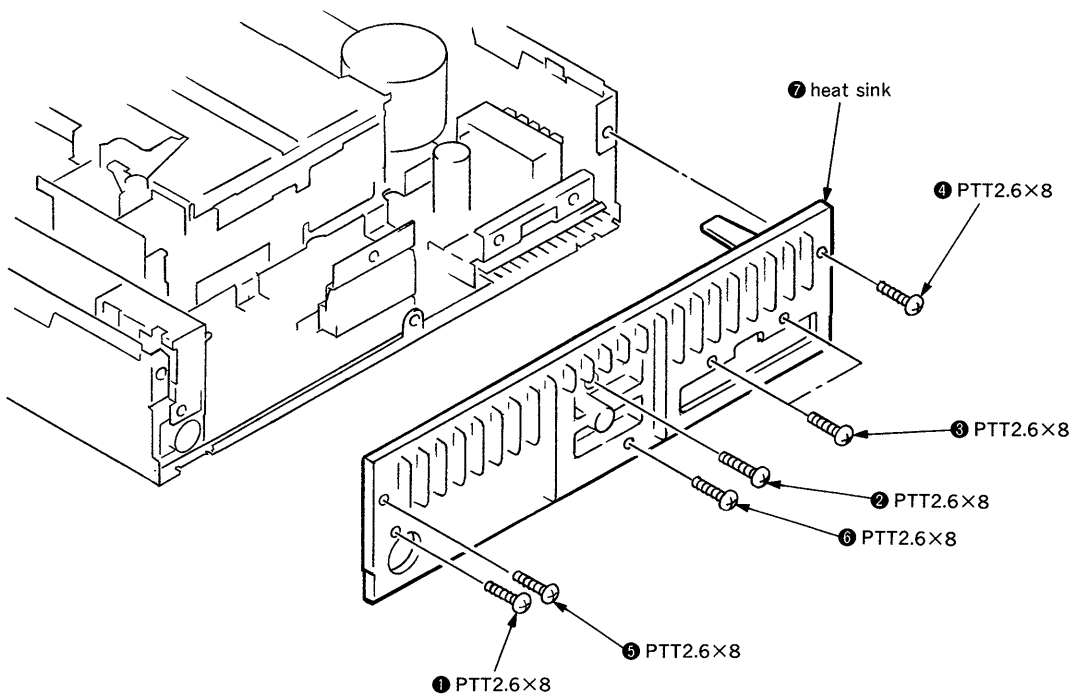
SECTION 2
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

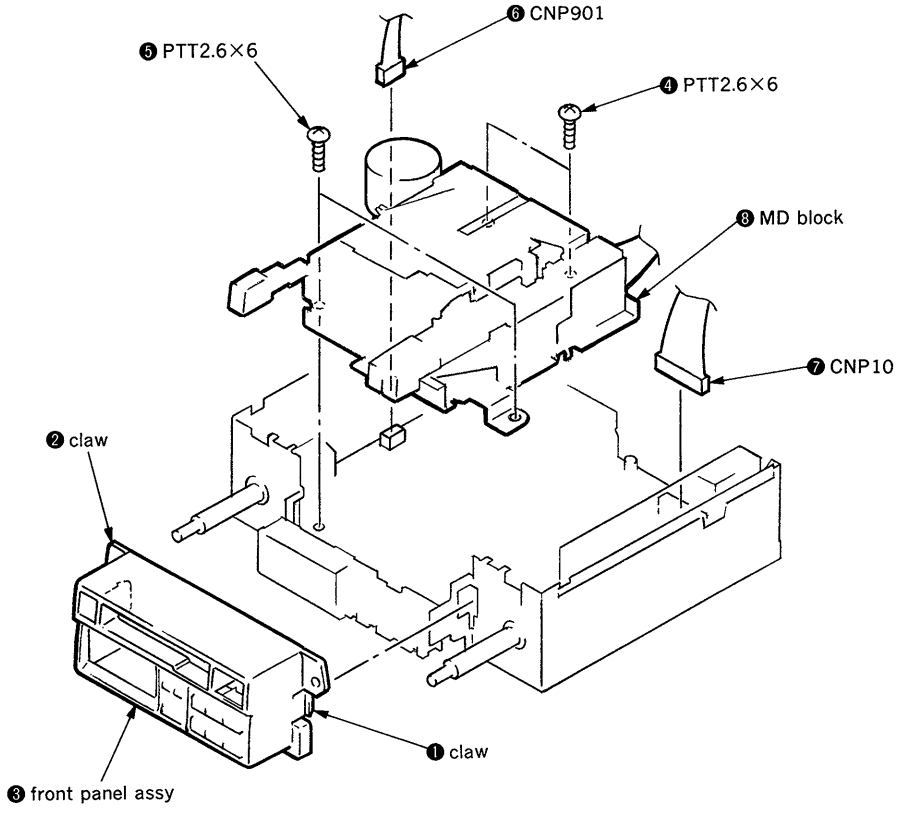
2-1. COVER



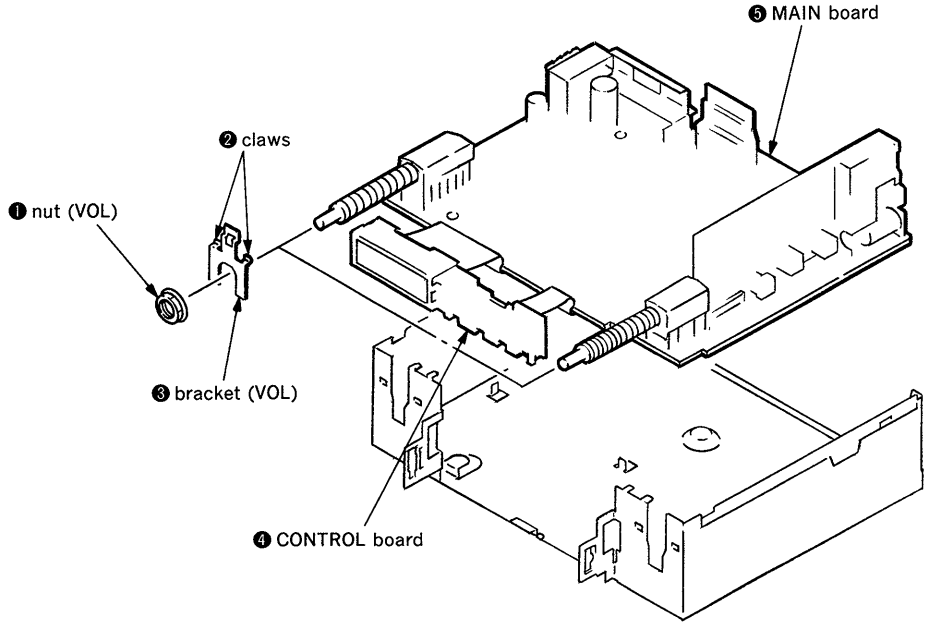
2-2. HEAT SINK



2-3. MD BLOCK



2-4. MAIN BOARD



SECTION 3
MECHANICAL ADJUSTMENTS

PRECAUTION

1. Wipe the following components with an absorbent cotton cloth moistened with alcohol before adjustment:
   PB head　　Pinch roller
   Idler　　Rubber belt
   Capstan
2. Demagnetize the PB head using a head demagnetizer.
3. Be careful not to use a magnetized screwdriver.
4. After the adjustment is completed, lock the adjustment parts using screws.
5. Unless otherwise specified, make adjustments at the specified voltage (14.4V).

Torque Measurement

Mode	Torque Meter	Meter Reading
FWD	CQ-102C	25−55g•cm (0.35−0.76 oz•inch)
FWD Back Tension		1.5−4.0g•cm (0.02−0.05 oz•inch)
REV	CQ-102RC	25−55g•cm (0.35−0.76 oz•inch)
REV Back Tension		1.5−4.0g•cm (0.02−0.05 oz•inch)
FF, REW	CQ-201B	more than 50g•cm (more than 0.70oz•inch)

SECTION 4
ELECTRICAL ADJUSTMENTS

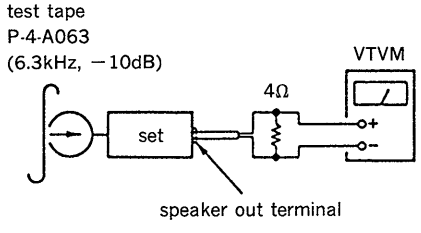
See the adjustment location from on page 14 and 15 for the adjustment.

DECK SECTION　**0dB=0.775V**

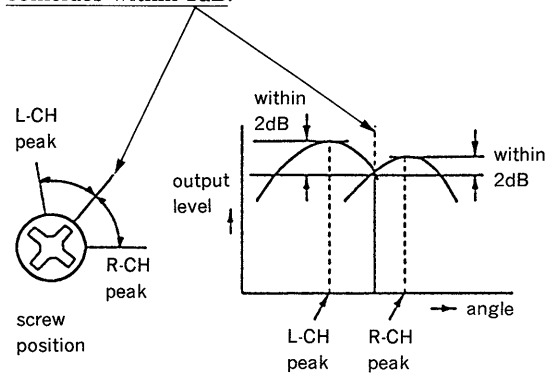
PB Head Azimuth Adjustment

Procedure:

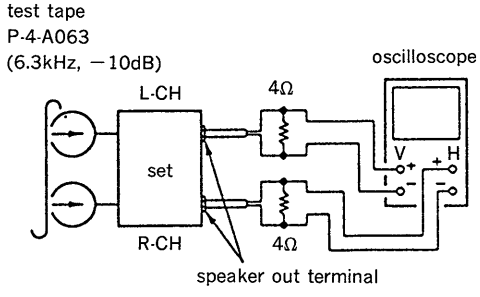
1. Put the set into the FWD PB mode.

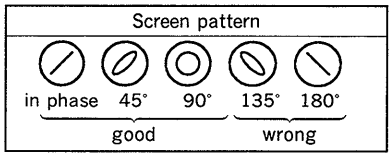


2. Turn the screw and check the output peak value. Adjust the screw so that the peak value in channels L and R coincides within 2dB.



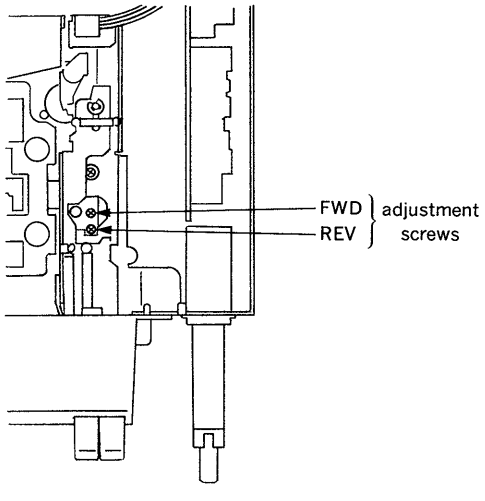
3. Check the phase in the PB mode.





4. Repeat the above adjustment for the REV PB mode.

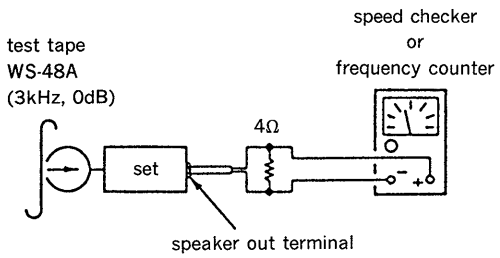
Adjustment Location: PB head



Tape Speed Adjustment

Procedure :

1. Put the set into the FWD PB mode.

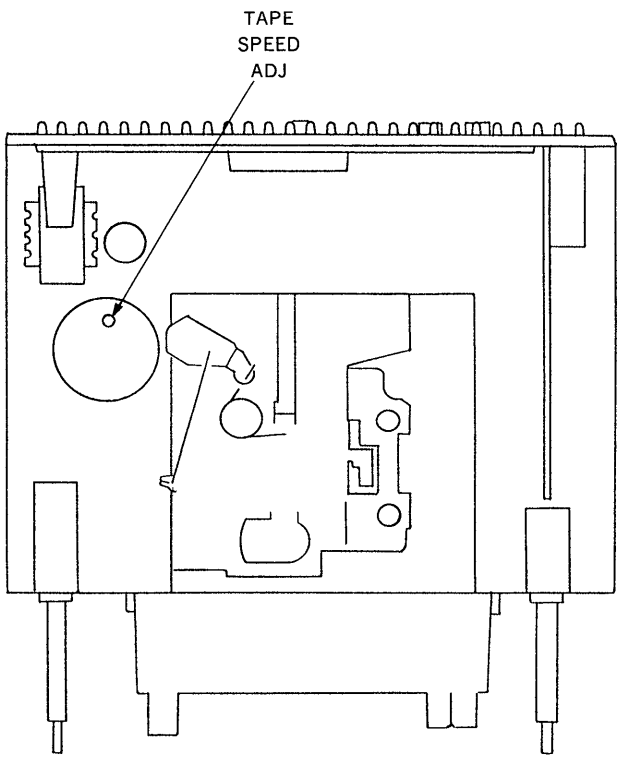


Specification : Constant speed

Speed checker	Frequency counter
−1.5 to +2.5%	2,955 to 3,075Hz

Adjustment Location :

—SET UPPER VIEW—



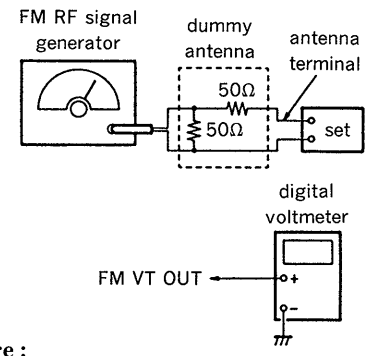
TUNER SECTION | 0dB=1μV

Cautions during repair
When the tuner unit is defective, replace it by a new one because its internal block is difficult to repair.

FM VT Voltage Adjustment

Setting :

FM/AM button : FM



Procedure :

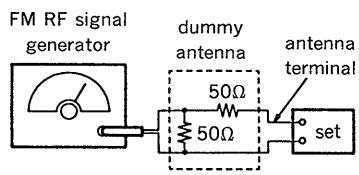
Adjust for the following value reading on digital voltmeter.		
Frequency Display	87.5MHz	107.9MHz
Reading on Digital voltmeter	1.42±0.05V	7.2±0.5V
Adjustment Part	T4	(confirmation)

Adjustment Location : See page 14 and 15.

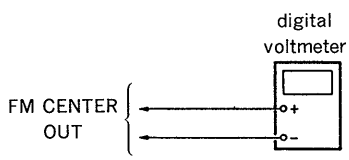
FM Center Adjustment

Setting :

FM/AM button : FM

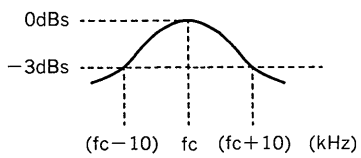


Carrier frequency : 98.1MHz
Output level : 60dB (1mV)
Mode : mono
Modulation : 1kHz, 75kHz deviation (100%)



Procedure :

1. Adjust T5 on TU1 so that the reading on the digital voltmeter becomes in 0±20mV.
2. Output an Fcenter 60dB signal output from FM RF signal generator so that the speaker output terminal is 0dBs.
3. Change the FM RF signal generator frequency and check the deviation of the frequency on +side and −side when the speaker output terminal drops 3dB. (Both +side and −side is approx. 50kHz.)
4. Re-adjust T2 on TU1 when the difference deviation of the frequency does more than 10kHz.

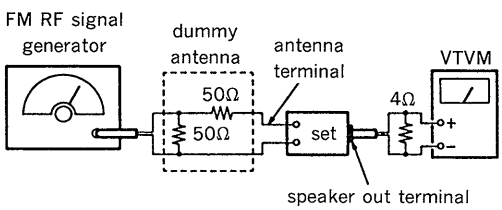


Adjustment Location : See page 14 and 15.

FM SENS/IF Adjustment

Setting

FM/AM button : FM



Procedure :

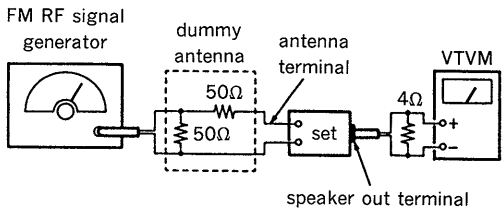
Adjust for a maximum reading on VTVM.
T1-T3
87.5MHz

Adjustment Location : See page 14.

FM High Cut Control Adjustment

Setting :

FM/AM button : FM



Carrier frequency : 98.1MHz
Output level : 60dB (1mV)
Mode : mono
Modulation : 10kHz, 40kHz deviation

Procedure :

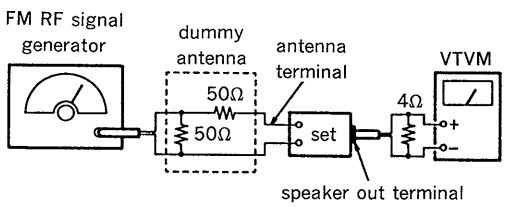
1. Tune the 98.1MHz.
2. The then output level is supposing that (A) dB.
3. Adjust with the volume RV1 on TU1 so that the output level is (A) −6dB then signal generator input set to 20dB.

Adjustment Location : See page 14.

FM Stereo Separation Adjustment

Setting :

FM/AM button : FM



Carrier frequency : 98.1MHz
Output level : 70dB (3.2mV)
Mode : stereo
Modulation : 1kHz, 75kHz deviation (100%) (L-CH only)

Procedure :

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV2 on TU1 for minimum reading.

L-CH Stereo separation : Ⓐ−Ⓑ

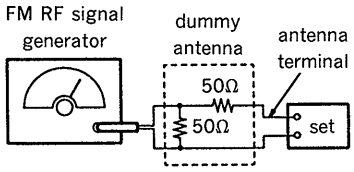
Specification : Separation more than 23dB

Adjustment Location : See page 14.

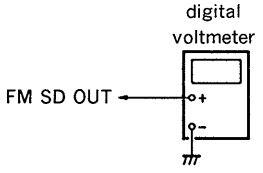
FM Auto Scan/Stop Level Adjustment

Setting :

FM/AM button : FM



Carrier frequency : 98.1MHz
Output level : 22dB (12.6μV)
Mode : mono
Modulation : 1kHz, 22.5kHz deviation (30%)



Procedure :

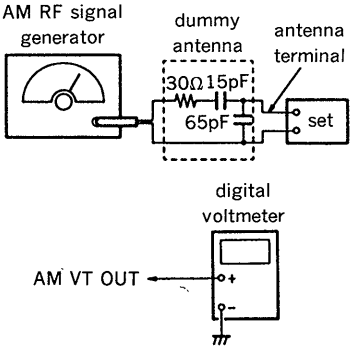
1. Adjust RV3 on TU1 so that the reading on the digital voltmeter changes point from minimum to maximum. (approx. 0.6V)
2. Confirm that the set stops auto-scanning with FM RF signal generator output level set at 22±2dB.

Adjustment Location : See page 14 and 15.

AM VT Adjustment

Setting :

FM/AM button : AM



Procedure :

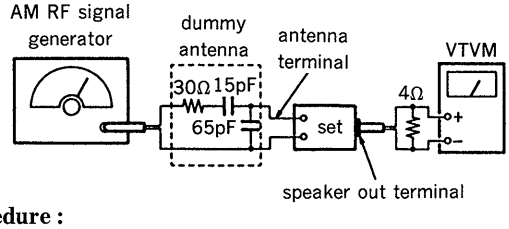
Adjust for the following value reading on digital voltmeter.		
Frequency Display	530kHz	1,710Hz
Reading on Digital voltmeter	1.42±0.05V	6.8±0.5V
Adjustment Part	T9	(confirmation)

Adjustment Location : See page 14 and 15.

AM IF Adjustment

Setting :

FM/AM buton : AM



Procedure :

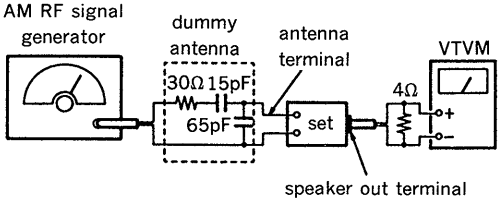
Adjust for a maximum reading on VTVM.
T8
450kHz

Adjustment Location : See page 14.

AM ANT Adjustment

Setting :

FM/AM button : AM



Procedure :

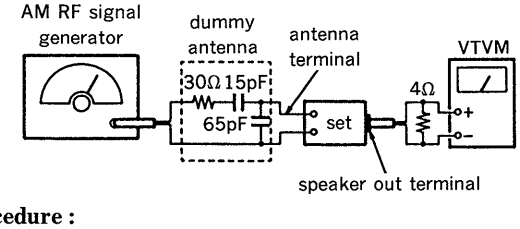
Adjust for a maximum reading on VTVM.
T6
600kHz

Adjustment Location : See page 14.

AM SENS Adjustment

Setting :

FM/AM button : AM



Procedure :

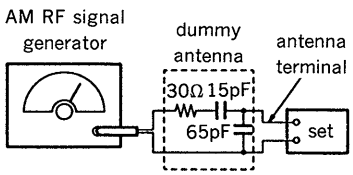
Adjust for a maximum reading on VTVM.	
T7	C91
530kHz	1,710kHz

Adjustment Location : See page 14.

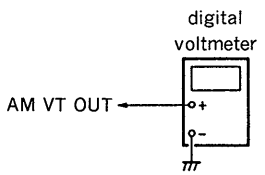
AM Auto Scan/Stop Level Adjustment

Setting :

FM/AM button : AM



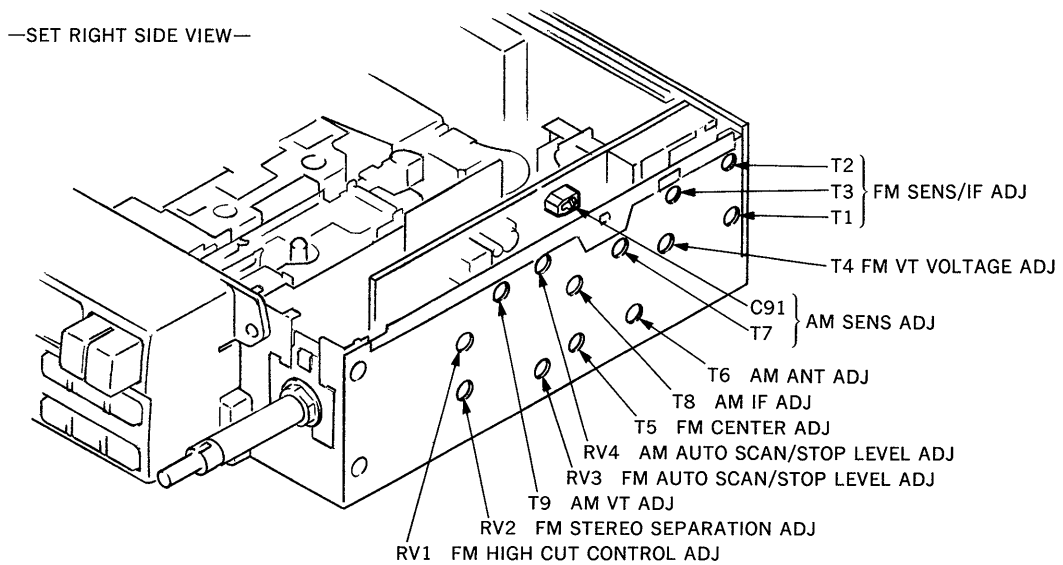
Carrier frequency : 1000kHz
30%amplitude modulation by 400Hz signal
Output level : 30dB (31.6μV)



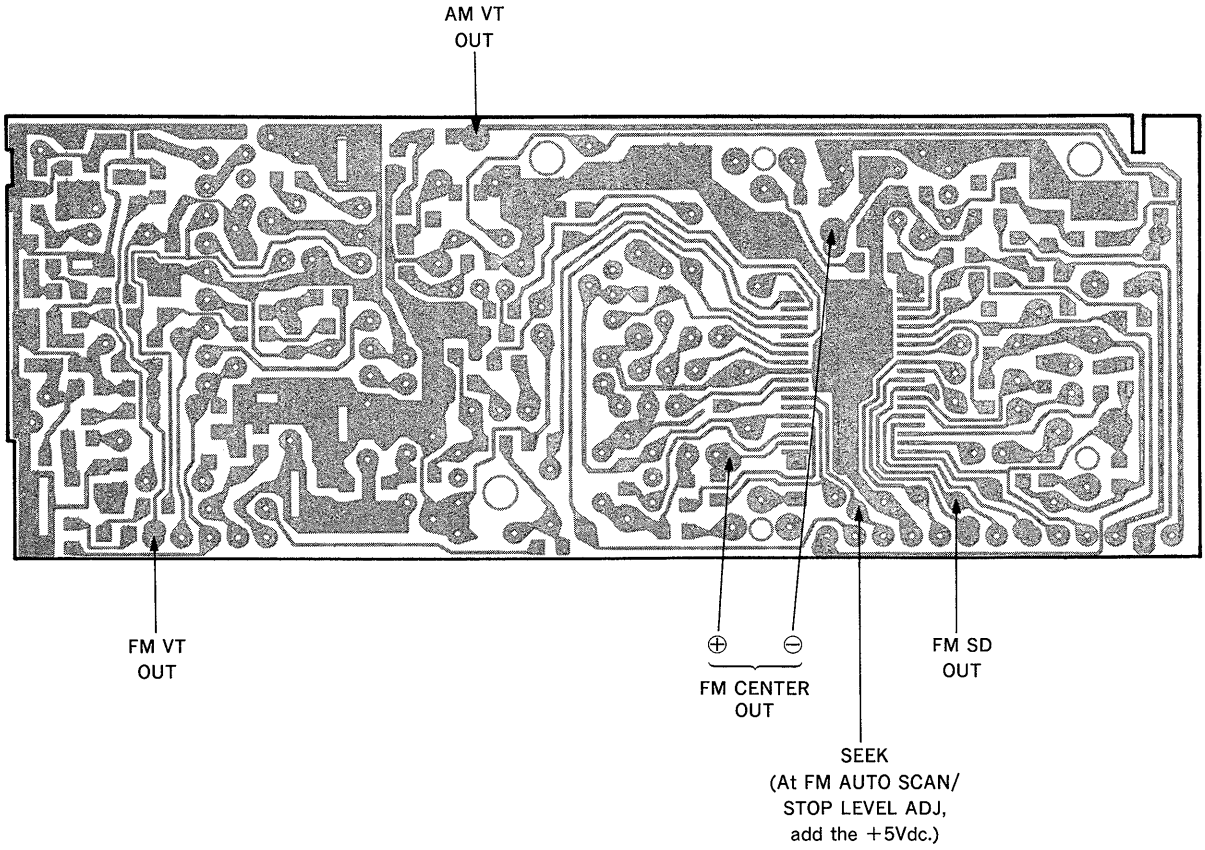
Procedure :

1. Adjust RV4 on TU1 so that the reading on the digital voltmeter changes point from minimum to maximum. (approx. 0.6V)
2. Confirm that the set stops auto-scanning with AM RF signal generator output level set at 33±2dB.

Adjustment Location : See page 15.



Measurement Point Location : tuner unit (TU1)—conductor side—



SECTION 5
DIAGRAMS

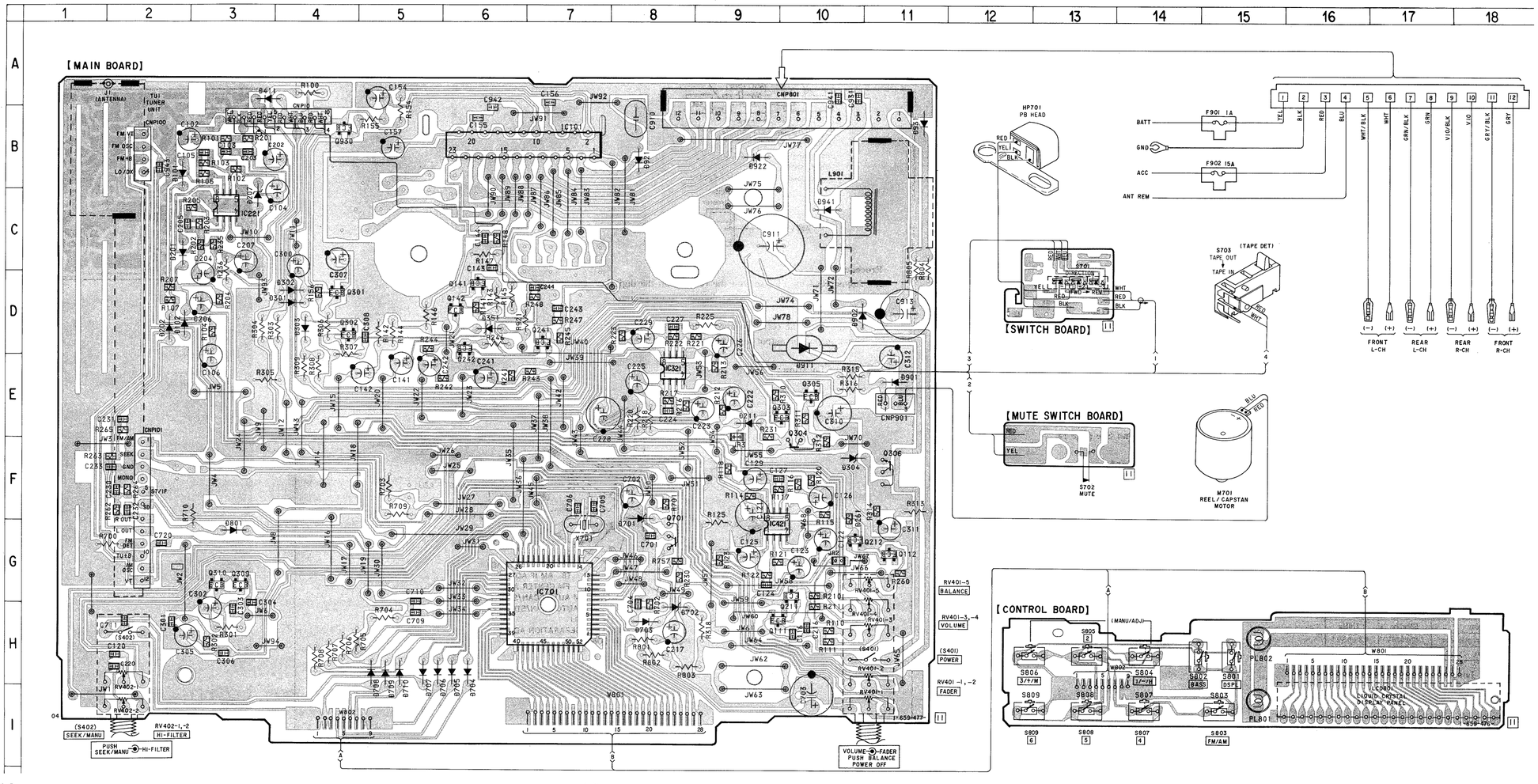
5-1. PRINTED WIRING BOARDS

● **Semiconductor Location**

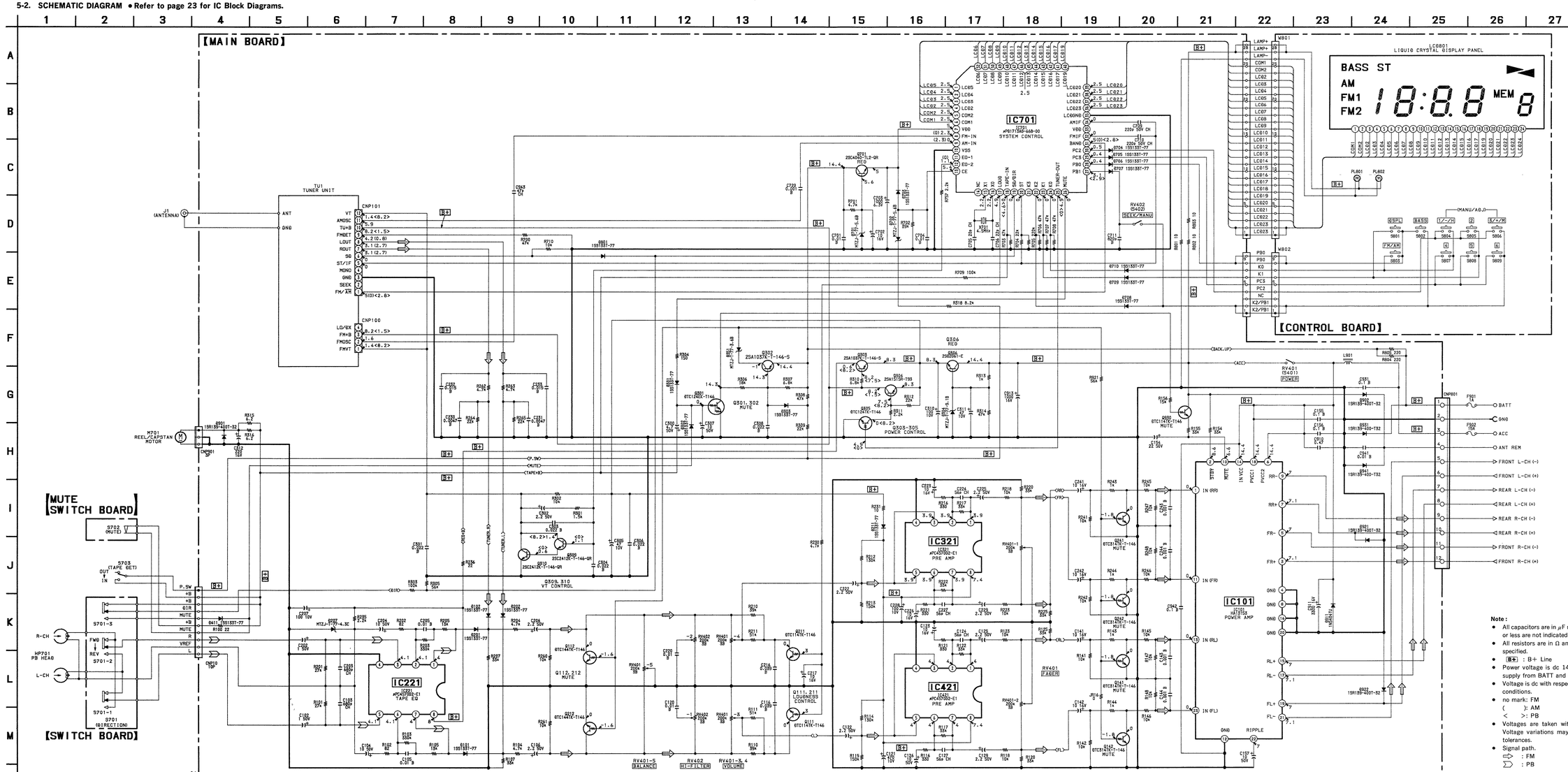
Ref. No.	Location	Ref. No.	Location
D101	B-2	D931	B-11
D102	D-2	D941	C-10
D201	C-2		
D202	D-2	IC101	B-7
D207	C-3	IC221	C-3
D211	E-9	IC321	E-8
D301	D-4	IC421	F-9
D302	D-4	IC701	G-7
D303	D-4		
D304	F-10	Q111	H-9
D351	D-6	Q112	G-11
D411	A-3	Q141	D-6
D701	F-8	Q142	D-6
D702	H-8	Q211	G-10
D703	H-8	Q212	G-10
D704	H-6	Q241	D-7
D705	H-6	Q242	D-6
D706	H-5	Q301	D-4
D707	H-5	Q302	D-4
D708	H-5	Q303	E-10
D709	H-5	Q304	E-10
D710	H-5	Q305	E-10
D801	G-3	Q306	F-11
D901	E-11	Q309	G-3
D902	D-10	Q310	G-3
D911	D-10	Q701	F-8
D921	B-8	Q930	B-4
D922	B-9		

Note :

● ○— : parts extracted from the component side.



5-2. SCHEMATIC DIAGRAM • Refer to page 23 for IC Block Diagrams.

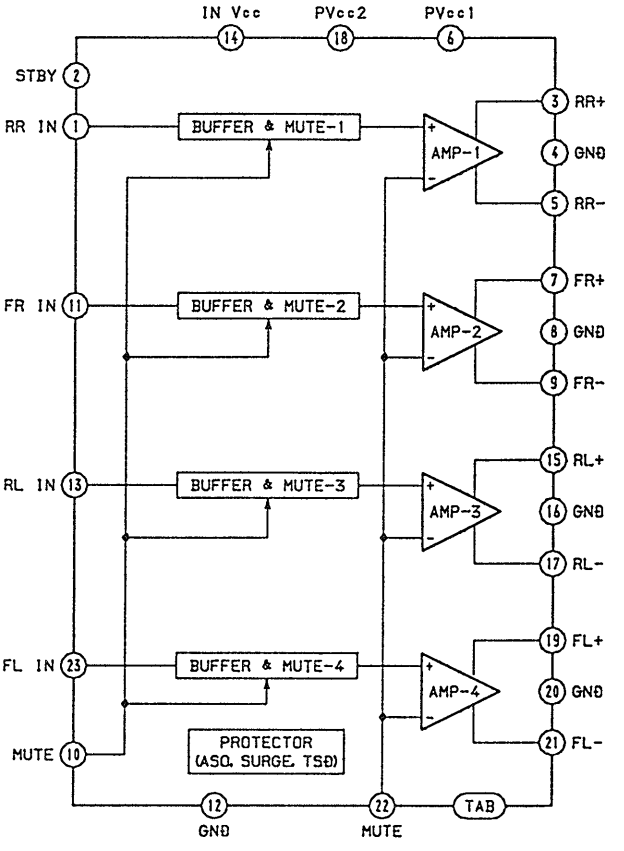


Note :

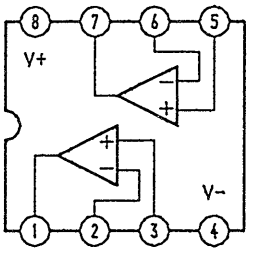
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- B+ : B+ Line
- Power voltage is dc 14.4V and fed with regulated dc power supply from BATT and ACC terminals.
- Voltage is dc with respect to ground under no-signal (detuned) conditions.
- no mark: FM
  ( ): AM
  < >: PB
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM
  ⇨ : PB

• IC Block Diagrams

IC101 HA13153



IC221, 321, 421 μPC4570G2-E1

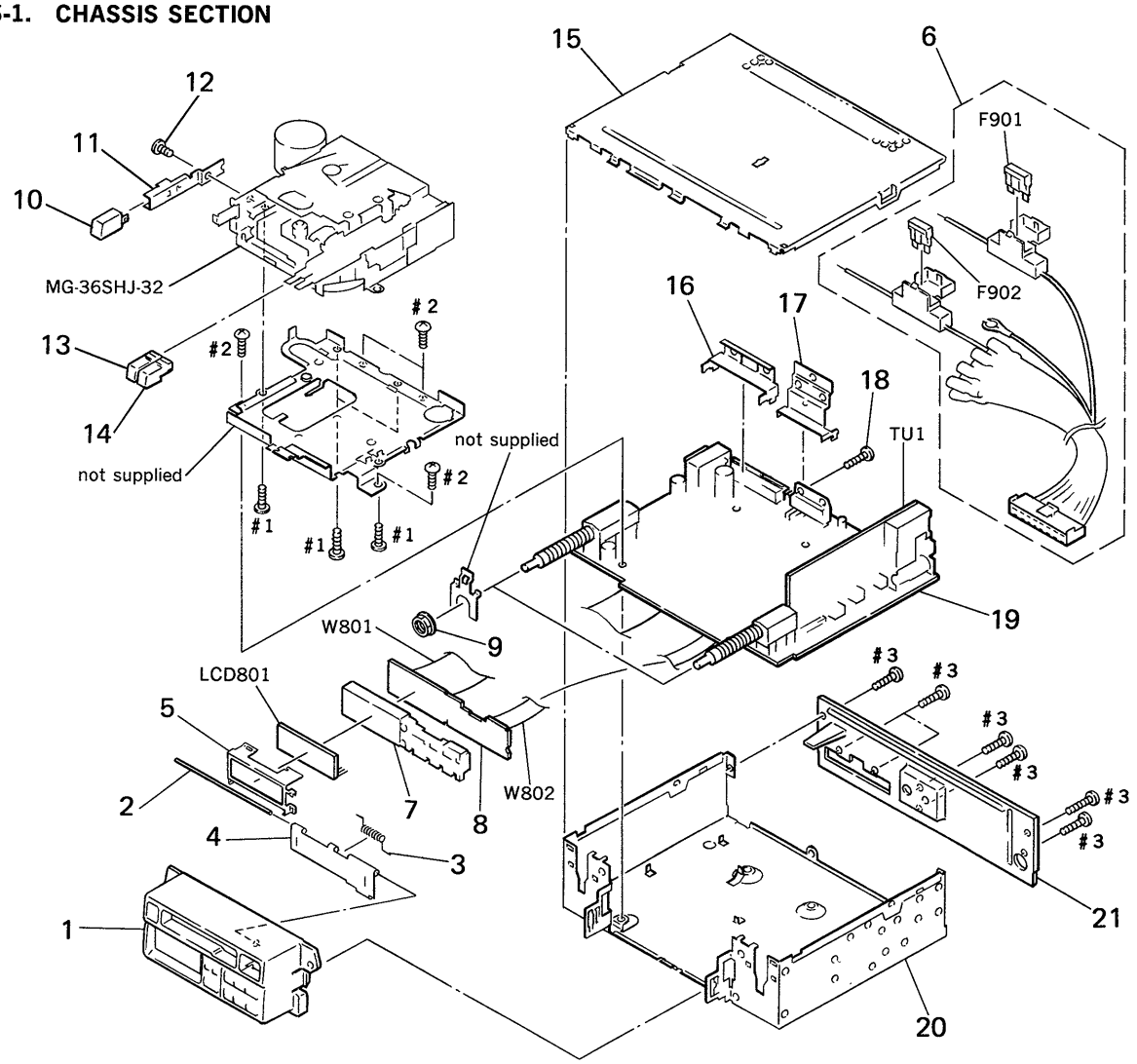


SECTION 6
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)... (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

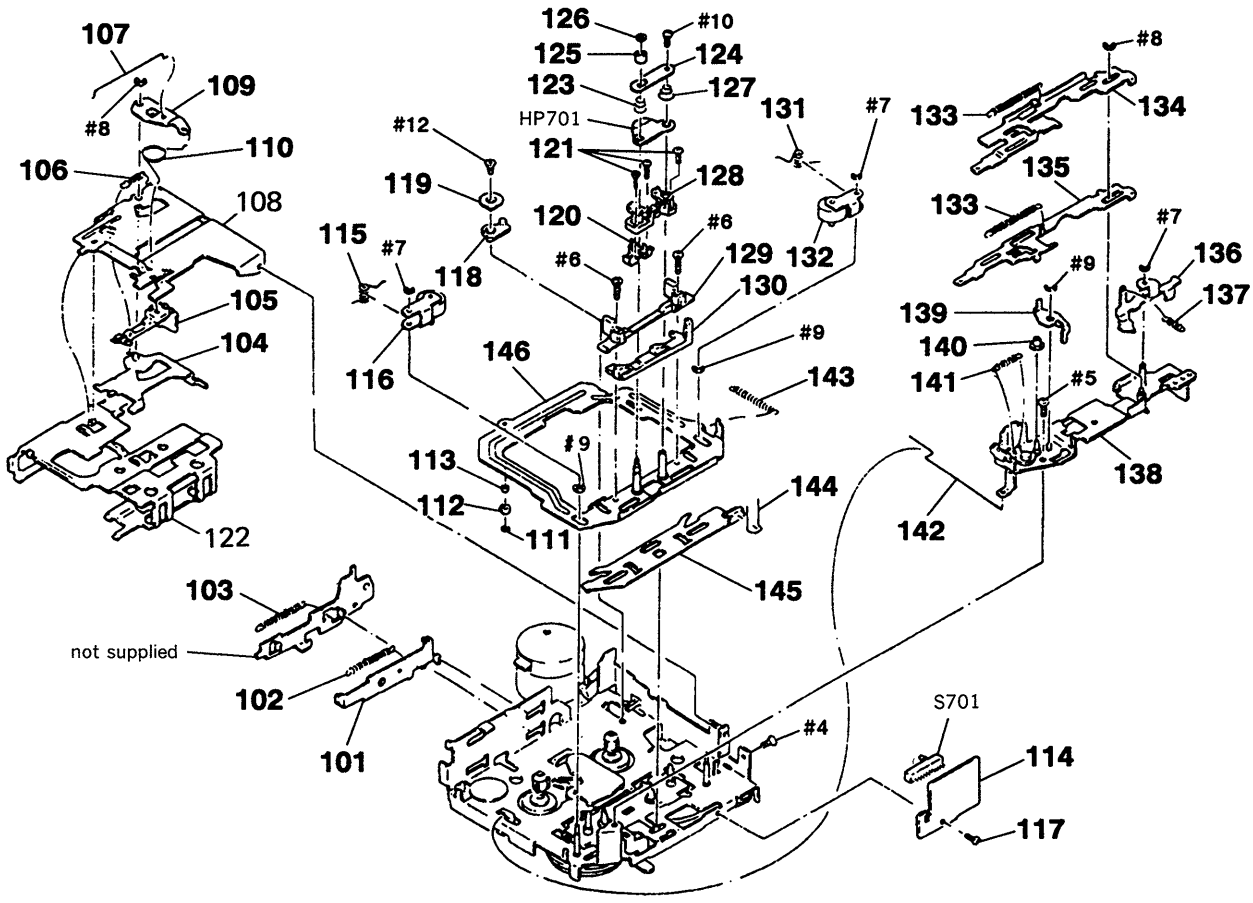
6-1. CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
1	X-3367-923-1	PANEL SUB ASSY, FRONT	
2	3-332-130-01	SHAFT, C DOOR	
3	3-559-944-00	SPRING	
4	3-912-312-51	DOOR, CASSETTE	
* 5	3-911-290-01	BRACKET (LCD)	
6	1-776-855-21	CORD (WITH CONNECTOR)	
* 7	3-935-089-01	PLATE, LIGHT GUIDE	
* 8	1-659-476-11	CONTROL BOARD	
9	3-575-039-02	NUT (VOL)	
10	3-373-631-01	BUTTON (EJECT)	
11	3-392-429-01	LEVER (EJECT)	
12	3-372-033-11	SCREW (2.6X3), +P	
13	3-373-632-01	BUTTON (REW)	
14	3-373-633-01	BUTTON (FF)	

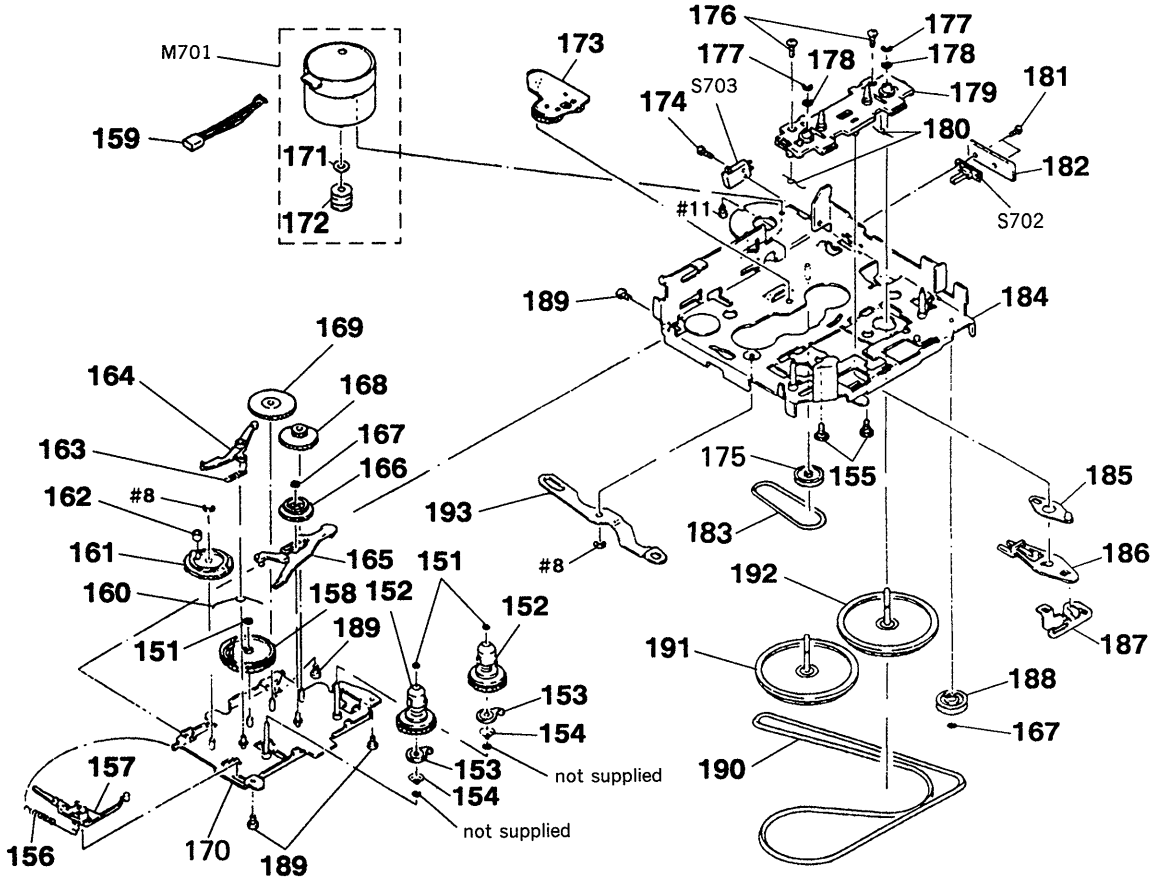
Ref. No.	Part No.	Description	Remark
* 15	3-931-292-01	COVER	
* 16	3-931-296-01	BRACKET (CONNECTOR)	
* 17	3-920-526-01	BRACKET (23P)	
18	3-922-535-01	SCREW (+BTT)	
* 19	A-3294-001-A	MAIN BOARD, COMPLETE	
* 20	3-931-293-01	CHASSIS (MAIN)	
* 21	3-931-294-01	HEAT SINK	
F901	1-532-798-11	FUSE (BLADE TYPE) (AUTO FUSE) 1A	
F902	1-533-331-11	FUSE (BLADE TYPE) (AUTO FUSE) 15A	
LCD801	1-810-460-31	DISPLAY PANEL, LIQUID CRYSTAL	
TU1	A-3309-002-A	TUNER UNIT	
W801	1-751-021-21	CABLE, FLAT (28 CORE)	
W802	1-769-356-11	CABLE, FLAT 9P	

6-2. MECHANISM DECK SECTION 1 (MG-36SHJ-32)



Ref. No.	Part No.	Description	Remark
* 101	3-392-978-01	LEVER, EJECT	
102	3-392-950-01	SPRING	
103	3-392-951-01	SPRING	
* 104	3-392-921-01	LOCK ASSY, EJECT CAM	
105	3-392-972-01	HOOKER, TAPE	
106	3-392-953-01	SPRING	
107	3-392-969-01	LINK, RETURN	
108	3-375-383-01	HANGER (X), CASSETTE	
* 109	3-392-932-01	PLATE, CENTER	
110	3-392-961-01	SPRING (B)	
111	3-570-615-00	POLY-WASHER (DIA. 1.2)	
112	3-392-945-01	ROLLER (A), H.P	
113	3-392-942-01	ROLLER (B), H.P	
114	3-392-970-01	CHASSIS, SWITCH	
115	3-392-958-01	SPRING (R)	
116	3-375-378-01	ARM (R) ASSY, PINCH	
* 117	4-908-792-11	SCREW (B2)	
118	3-372-244-01	ARM (N), MUTE	
* 119	3-397-427-01	COLLAR, MUTE ARM	
120	3-377-908-01	SHIM (X), ADJUSTOR	
121	3-375-379-01	SCREW, AZIMUTH	
122	3-375-384-01	HOLDER (X), CASSETTE	
123	3-392-956-01	SPRING (A)	
* 124	3-392-930-01	RETAINER, SPRING	
125	3-392-943-01	ROLLER, FF	
126	3-676-387-00	POLY-SLIDER (DIA. 1.6)	
127	3-392-955-01	SPRING (A)	
* 128	3-379-142-01	ARM (B), ADJUSTOR	
129	3-392-984-02	GUIDE, TAPE	
130	3-377-909-02	LINK (X), ADJUSTOR	
131	3-392-957-01	SPRING (F)	
132	3-375-377-01	ARM (F) ASSY, PINCH	
133	3-392-948-01	SPRING	
* 134	3-392-980-01	LEVER, FF	
* 135	3-392-981-01	LEVER, REW	
* 136	3-392-935-01	ARM, LOCK	
137	3-392-917-01	SPRING	
* 138	3-372-242-01	BRACKET ASSY (D), LEVER	
* 139	3-392-933-01	LEVER (B), CHANGE	
140	3-392-994-01	ROLLER, PROGRAM	
141	3-392-954-01	SPRING	
142	3-372-243-01	LINK (B), SELECTOR	
143	3-392-952-01	SPRING	
144	3-392-962-01	SPRING	
* 145	3-392-919-01	ARM ASSY, F, R SELECTION	
* 146	3-392-975-05	PLATE ASSY (S), HEAD	
HP701	1-543-717-11	HEAD, MAGNETIC (PLAYBACK)	
S701	1-692-502-11	SWITCH, SLIDE (DIRECTION)	

6-3. MECHANISM DECK SECTION 2 (MG-36SHJ-32)



Ref. No.	Part No.	Description	Remark
151	3-676-387-00	POLY-SLIDER (DIA. 1.6)	
152	3-376-196-01	SPINDLE ASSY (S), REEL	
153	3-375-380-01	CAM ASSY, DETECTION	
154	3-370-619-01	SPRING, BACK TENSION	
155	3-392-918-01	SCREW, EJECT HOOK	
156	3-392-959-01	SPRING	
157	3-392-985-02	RATCHET	
158	3-392-990-01	GEAR, DETECTION	
* 159	3-376-195-01	CONNECTOR ASSY (3P)	
160	3-392-960-01	SPRING	
161	3-392-987-01	GEAR, SELECTOR	
162	3-392-944-01	COLLAR (SELECTOR GEAR)	
163	3-375-131-01	SPRING, GEAR LOCK ARM	
164	3-392-989-02	ARM, GEAR LOCK	
165	3-392-986-01	ARM, SENSOR	
166	3-392-915-01	GEAR, IDLE	
167	3-570-615-00	POLY-WASHER (DIA. 1.2)	
168	3-392-936-01	GEAR (A)	
169	3-392-937-01	GEAR (B)	
* 170	3-392-976-01	BASE ASSY, REEL	
* 171	3-392-912-01	WASHER, MYLAR	
* 172	3-392-913-01	PULLEY, MOTOR	
173	3-392-916-01	ARM ASSY, TU GEAR	

Ref. No.	Part No.	Description	Remark
174	3-318-203-11	SCREW (B1.7X6), TAPPING	
175	3-392-938-01	GEAR, PULLY	
176	3-318-204-81	SCREW (M1.7X3), TAPPING	
177	3-590-768-00	RING (A), E	
178	3-701-437-11	POLY-SLIDER (A)	
* 179	3-375-381-01	BRACKET ASSY (X), CM	
180	3-392-963-01	SPRING (R)	
181	3-318-204-91	SCREW (M1.7X4), TAPPING	
182	3-375-376-01	MUTE (PWB)	
183	3-375-375-02	BELT (C), SUB	
* 184	3-392-974-01	CHASSIS ASSY, MAIN	
* 185	3-392-925-01	ARM (A) ASSY, F.R	
* 186	3-392-939-01	ARM, FF	
* 187	3-392-934-01	ARM (B), F.R	
188	3-392-941-01	PULLEY (A), IDLE	
* 189	4-908-792-11	SCREW (B2)	
190	3-392-967-01	BELT, MAIN	
191	3-392-995-02	FLYWHEEL ASSY (BR)	
192	3-392-926-02	FLYWHEEL ASSY (BF)	
* 193	3-392-979-01	LEVER, REVERSE	
M701	X-3364-496-1	MOTOR ASSY (REEL/CAPSTAN)	
S702	1-692-065-11	SWITCH, LEAF (MUTE)	
S703	1-554-790-21	SWITCH, POWER (TAPE DET)	

SECTION 7
ELECTRICAL PARTS LIST

CONTROL **MAIN**

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA ..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	1-659-476-11	CONTROL BOARD			
		**********			
		< LIQUID CRYSTAL DISPLAY >			
LCD801	1-810-460-31	DISPLAY PANEL, LIQUID CRYSTAL			
		< PILOT LAMP >			
PL801	1-517-536-11	LAMP, PILOT			
PL802	1-517-536-11	LAMP, PILOT			
		< SWITCH >			
S801	1-572-704-31	SWITCH, KEY BOARD (DSPL)			
S802	1-572-704-31	SWITCH, KEY BOARD (BASS)			
S803	1-572-704-31	SWITCH, KEY BOARD (FM/AM)			
S804	1-572-704-31	SWITCH, KEY BOARD (1/-/H (MANU/ADJ))			
S805	1-572-704-31	SWITCH, KEY BOARD (2)			
S806	1-572-704-31	SWITCH, KEY BOARD (3/+/M (MANU/ADJ))			
S807	1-572-704-31	SWITCH, KEY BOARD (4)			
S808	1-572-704-31	SWITCH, KEY BOARD (5)			
S809	1-572-704-31	SWITCH, KEY BOARD (6)			
**********					
*	A-3294-001-A	MAIN BOARD, COMPLETE			
		**********			
*	3-920-526-01	BRACKET (23P)			
	3-922-535-01	SCREW (+BTT)			
*	3-931-296-01	BRACKET (CONNECTOR)			
		< CAPACITOR >			
C102	1-126-301-11	ELECT	1uF	20% 50V	
C103	1-163-137-00	CERAMIC CHIP	680PF	5% 50V	
C104	1-124-907-11	ELECT	10uF	20% 50V	
C105	1-164-232-11	CERAMIC CHIP	0.01uF	50V	
C106	1-126-961-11	ELECT	2.2uF	20% 50V	
C116	1-162-587-11	CERAMIC CHIP	0.039uF	10% 25V	
C120	1-164-232-11	CERAMIC CHIP	0.01uF	50V	
C121	1-124-472-11	ELECT	470uF	20% 10V	
C122	1-126-961-11	ELECT	2.2uF	20% 50V	
C123	1-124-907-11	ELECT	10uF	20% 50V	
C124	1-163-245-11	CERAMIC CHIP	56PF	5% 50V	
C125	1-126-961-11	ELECT	2.2uF	20% 50V	
C126	1-124-907-11	ELECT	10uF	20% 50V	
C127	1-163-245-11	CERAMIC CHIP	56PF	5% 50V	
C129	1-126-961-11	ELECT	2.2uF	20% 50V	
C141	1-126-157-11	ELECT	10uF	20% 16V	
C142	1-126-157-11	ELECT	10uF	20% 16V	
C143	1-163-009-11	CERAMIC CHIP	0.001uF	10% 50V	
C144	1-163-009-11	CERAMIC CHIP	0.001uF	10% 50V	
C154	1-126-965-11	ELECT	22uF	20% 50V	
C155	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V	
C156	1-164-004-11	CERAMIC CHIP	0.1uF	10% 25V	
C157	1-124-907-11	ELECT	10uF	20% 50V	
C202	1-126-301-11	ELECT	1uF	20% 50V	
C203	1-163-137-00	CERAMIC CHIP	680PF	5% 50V	
C204	1-124-907-11	ELECT	10uF	20% 50V	
C205	1-164-232-11	CERAMIC CHIP	0.01uF	50V	
C206	1-126-961-11	ELECT	2.2uF	20% 50V	
C207	1-124-443-00	ELECT	100uF	20% 10V	
C216	1-162-587-11	CERAMIC CHIP	0.039uF	10% 25V	
C217	1-126-157-11	ELECT	10uF	20% 16V	
C220	1-164-232-11	CERAMIC CHIP	0.01uF	50V	
C222	1-124-257-00	ELECT	2.2uF	20% 50V	
C223	1-126-157-11	ELECT	10uF	20% 16V	
C224	1-163-245-11	CERAMIC CHIP	56PF	5% 50V	
C225	1-124-257-00	ELECT	2.2uF	20% 50V	
C226	1-126-157-11	ELECT	10uF	20% 16V	
C227	1-163-245-11	CERAMIC CHIP	56PF	5% 50V	
C228	1-124-584-00	ELECT	100uF	20% 10V	
C229	1-124-257-00	ELECT	2.2uF	20% 50V	
C230	1-163-017-00	CERAMIC CHIP	0.0047uF	5% 50V	
C231	1-163-017-00	CERAMIC CHIP	0.0047uF	5% 50V	
C232	1-163-023-00	CERAMIC CHIP	0.015uF	5% 50V	
C233	1-163-023-00	CERAMIC CHIP	0.015uF	5% 50V	
C241	1-126-157-11	ELECT	10uF	20% 16V	
C242	1-126-157-11	ELECT	10uF	20% 16V	
C243	1-163-009-11	CERAMIC CHIP	0.001uF	10% 50V	
C244	1-163-009-11	CERAMIC CHIP	0.001uF	10% 50V	
C300	1-126-963-11	ELECT	4.7uF	20% 50V	
C301	1-163-037-11	CERAMIC CHIP	0.022uF	10% 25V	

MAIN

Ref. No.	Part No.	Description			Remark
C302	1-126-961-11	ELECT	2. 2uF	20%	50V
C303	1-163-037-11	CERAMIC CHIP	0. 022uF	10%	25V
C304	1-163-037-11	CERAMIC CHIP	0. 022uF	10%	25V
C305	1-104-664-11	ELECT	47uF	20%	10V
C306	1-163-037-11	CERAMIC CHIP	0. 022uF	10%	25V
C307	1-124-907-11	ELECT	10uF	20%	50V
C308	1-163-037-11	CERAMIC CHIP	0. 022uF	10%	25V
C310	1-124-584-00	ELECT	100uF	20%	10V
C311	1-104-664-11	ELECT	47uF	20%	10V
C312	1-126-934-11	ELECT	220uF	20%	16V
C701	1-164-232-11	CERAMIC CHIP	0. 01uF		50V
C702	1-126-157-11	ELECT	10uF	20%	16V
C703	1-124-471-00	ELECT	1000uF	20%	6. 3V
C704	1-164-232-11	CERAMIC CHIP	0. 01uF		50V
C705	1-163-234-11	CERAMIC CHIP	20PF	5%	50V
C706	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C709	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C710	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C711	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C720	1-163-009-11	CERAMIC CHIP	0. 001uF	10%	50V
C910	1-136-173-00	FILM	0. 47uF	5%	50V
C911	1-126-944-11	ELECT	3300uF	20%	16V
C913	1-126-942-61	ELECT	1000uF	20%	16V
C931	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C941	1-164-232-11	CERAMIC CHIP	0. 01uF		50V
C942	1-164-004-11	CERAMIC CHIP	0. 1uF	10%	25V
C943	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
		< CONNECTOR >			
* CNP10	1-506-992-11	PIN, CONNECTOR (PC BOARD) 10P			
CNP801	1-774-951-11	PIN, CONNECTOR 12P			
* CNP901	1-506-985-11	PIN, CONNECTOR (PC BOARD) 3P			
		< DIODE >			
D101	8-719-991-33	DIODE	1SS133T-77		
D102	8-719-991-33	DIODE	1SS133T-77		
D201	8-719-991-33	DIODE	1SS133T-77		
D202	8-719-991-33	DIODE	1SS133T-77		
D207	8-719-983-20	DIODE	MTZJ-T-77-4. 3C		
D211	8-719-991-33	DIODE	1SS133T-77		
D301	8-719-991-33	DIODE	1SS133T-77		
D302	8-719-991-33	DIODE	1SS133T-77		
D303	8-719-991-33	DIODE	1SS133T-77		
D304	8-719-110-13	DIODE	RD9. 1ESB2		
D351	8-719-109-69	DIODE	RD3. 6ES-B2		
D411	8-719-991-33	DIODE	1SS133T-77		
D701	8-719-109-89	DIODE	RD5. 6ESB2		
D702	8-719-109-89	DIODE	RD5. 6ESB2		
D703	8-719-991-33	DIODE	1SS133T-77		
D704	8-719-991-33	DIODE	1SS133T-77		
D705	8-719-991-33	DIODE	1SS133T-77		
D706	8-719-991-33	DIODE	1SS133T-77		
D707	8-719-991-33	DIODE	1SS133T-77		
D708	8-719-991-33	DIODE	1SS133T-77		
D709	8-719-991-33	DIODE	1SS133T-77		
D710	8-719-991-33	DIODE	1SS133T-77		
D801	8-719-991-33	DIODE	1SS133T-77		
D901	8-719-970-02	DIODE	1SR139-400		
D902	8-719-970-02	DIODE	1SR139-400		
D911	8-719-049-38	DIODE	1N5404TU		
D921	8-719-970-02	DIODE	1SR139-400		
D922	8-719-970-02	DIODE	1SR139-400		
D931	8-719-970-02	DIODE	1SR139-400		
D941	8-719-970-02	DIODE	1SR139-400		
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IC101	8-759-369-42	IC	HA13153		
IC221	8-759-106-02	IC	uPC4570G2		
IC321	8-759-106-02	IC	uPC4570G2		
IC421	8-759-106-02	IC	uPC4570G2		
IC701	8-759-258-01	IC	uPD1713AG-668-00		
		< JACK >			
J1	1-774-912-11	JACK (ANTENNA)			
		< JUMPER RESISTOR >			
JR2	1-216-295-00	CONDUCTOR, CHIP			(2012)
JR3	1-216-295-00	CONDUCTOR, CHIP			(2012)
		< COIL >			
L901	1-411-823-11	COIL, CHOKE			
		< TRANSISTOR >			
Q111	8-729-902-99	TRANSISTOR	DTC114TK		
Q112	8-729-903-30	TRANSISTOR	DTC144TK		
Q141	8-729-920-21	TRANSISTOR	DTC314TKH04		
Q142	8-729-920-21	TRANSISTOR	DTC314TKH04		
Q211	8-729-902-99	TRANSISTOR	DTC114TK		
Q212	8-729-903-30	TRANSISTOR	DTC144TK		
Q241	8-729-920-21	TRANSISTOR	DTC314TKH04		
Q242	8-729-920-21	TRANSISTOR	DTC314TKH04		
Q301	8-729-901-00	TRANSISTOR	DTC124EK		
Q302	8-729-216-22	TRANSISTOR	2SA1162-G		
Q303	8-729-216-22	TRANSISTOR	2SA1162-G		
Q304	8-729-111-52	TRANSISTOR	2SB984-K		
Q305	8-729-920-08	TRANSISTOR	DTC124TK		
Q306	8-729-209-15	TRANSISTOR	2SD2012		
Q309	8-729-120-28	TRANSISTOR	2SC1623-L5L6		

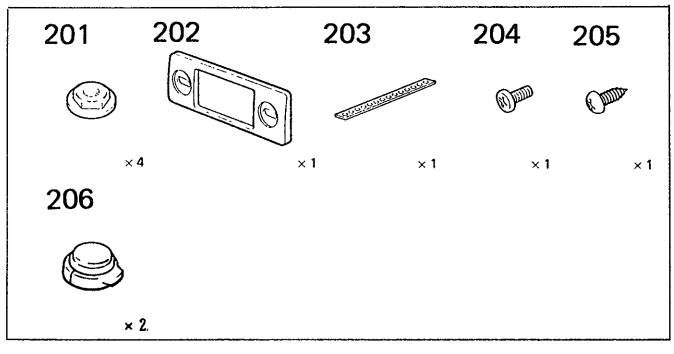
Ref. No.	Part No.	Description			Remark
Q310	8-729-120-28	TRANSISTOR	2SC1623-L5L6		
Q701	8-729-967-32	TRANSISTOR	2SC2673-Q		
Q930	8-729-920-21	TRANSISTOR	DTC314TKH04		
		< RESISTOR >			
R100	1-247-791-00	CARBON	22	5%	1/4W
R101	1-216-083-00	METAL CHIP	27K	5%	1/10W
R102	1-216-023-00	METAL CHIP	82	5%	1/10W
R103	1-216-109-00	METAL CHIP	330K	5%	1/10W
R104	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R105	1-216-076-00	METAL CHIP	13K	5%	1/10W
R107	1-216-085-00	METAL CHIP	33K	5%	1/10W
R110	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R111	1-216-090-00	METAL CHIP	51K	5%	1/10W
R114	1-216-100-00	METAL GLAZE	130K	5%	1/10W
R115	1-216-101-00	METAL CHIP	150K	5%	1/10W
R116	1-216-037-00	METAL CHIP	330	5%	1/10W
R117	1-216-085-00	METAL CHIP	33K	5%	1/10W
R118	1-216-073-00	METAL CHIP	10K	5%	1/10W
R120	1-216-085-00	METAL CHIP	33K	5%	1/10W
R121	1-216-037-00	METAL CHIP	330	5%	1/10W
R122	1-216-085-00	METAL CHIP	33K	5%	1/10W
R123	1-216-073-00	METAL CHIP	10K	5%	1/10W
R125	1-249-435-11	CARBON	33K	5%	1/4W
R141	1-216-073-00	METAL CHIP	10K	5%	1/10W
R142	1-249-429-11	CARBON	10K	5%	1/4W
R143	1-249-417-11	CARBON	1K	5%	1/4W
R144	1-249-417-11	CARBON	1K	5%	1/4W
R145-147					
	1-249-429-11	CARBON	10K	5%	1/4W
R148	1-216-073-00	METAL CHIP	10K	5%	1/10W
R154	1-249-435-11	CARBON	33K	5%	1/4W
R155	1-249-435-11	CARBON	33K	5%	1/4W
R156	1-216-077-00	METAL CHIP	15K	5%	1/10W
R201	1-216-083-00	METAL CHIP	27K	5%	1/10W
R202	1-216-023-00	METAL CHIP	82	5%	1/10W
R203	1-216-109-00	METAL CHIP	330K	5%	1/10W
R204	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R205	1-216-076-00	METAL CHIP	13K	5%	1/10W
R207	1-216-085-00	METAL CHIP	33K	5%	1/10W
R210	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R211	1-216-090-00	METAL CHIP	51K	5%	1/10W
R212	1-216-100-00	METAL GLAZE	130K	5%	1/10W
R213	1-216-101-00	METAL CHIP	150K	5%	1/10W
R216	1-216-037-00	METAL CHIP	330	5%	1/10W
R217	1-216-085-00	METAL CHIP	33K	5%	1/10W
R218	1-249-429-11	CARBON	10K	5%	1/4W
R220	1-249-435-11	CARBON	33K	5%	1/4W
R221	1-216-037-00	METAL CHIP	330	5%	1/10W

Ref. No.	Part No.	Description			Remark
R222	1-216-085-00	METAL CHIP	33K	5%	1/10W
R223	1-216-073-00	METAL CHIP	10K	5%	1/10W
R225	1-249-435-11	CARBON	33K	5%	1/4W
R230	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R231	1-216-001-00	METAL CHIP	10	5%	1/10W
R235	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R236	1-247-791-00	CARBON	22	5%	1/4W
R241	1-216-073-00	METAL CHIP	10K	5%	1/10W
R242	1-216-073-00	METAL CHIP	10K	5%	1/10W
R243	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R244	1-216-049-11	METAL GLAZE	1K	5%	1/10W
R245	1-216-073-00	METAL CHIP	10K	5%	1/10W
R246	1-249-429-11	CARBON	10K	5%	1/4W
R247	1-216-073-00	METAL CHIP	10K	5%	1/10W
R248	1-216-073-00	METAL CHIP	10K	5%	1/10W
R260	1-216-073-00	METAL CHIP	10K	5%	1/10W
R261	1-216-073-00	METAL CHIP	10K	5%	1/10W
R262	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R263	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R264	1-216-081-00	METAL CHIP	22K	5%	1/10W
R265	1-216-081-00	METAL CHIP	22K	5%	1/10W
R301	1-249-419-11	CARBON	1.5K	5%	1/4W
R302	1-216-073-00	METAL CHIP	10K	5%	1/10W
R303	1-249-441-11	CARBON	100K	5%	1/4W
R304	1-249-407-11	CARBON	150	5%	1/4W
R305	1-249-438-11	CARBON	56K	5%	1/4W
R306	1-249-432-11	CARBON	18K	5%	1/4W
R307	1-249-427-11	CARBON	6.8K	5%	1/4W
R308	1-249-437-11	CARBON	47K	5%	1/4W
R309	1-247-863-00	CARBON	22K	5%	1/4W
R310	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R311	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R312	1-216-081-00	METAL CHIP	22K	5%	1/10W
R313	1-249-417-11	CARBON	1K	5%	1/4W
R314	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R315	1-247-778-00	CARBON	6.2	5%	1/4W
R316	1-247-778-00	CARBON	6.2	5%	1/4W
R318	1-249-428-11	CARBON	8.2K	5%	1/4W
R700	1-249-437-11	CARBON	47K	5%	1/4W
R701	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R702	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R703	1-249-437-11	CARBON	47K	5%	1/4W
R704	1-247-863-00	CARBON	22K	5%	1/4W
R705	1-247-887-00	CARBON	220K	5%	1/4W
R706-708					
	1-249-437-11	CARBON	47K	5%	1/4W
R709	1-249-441-11	CARBON	100K	5%	1/4W
R710	1-249-429-11	CARBON	10K	5%	1/4W
R757	1-216-057-00	METAL CHIP	2.2K	5%	1/10W

MAIN

Ref. No.	Part No.	Description			Remark
R801-803					
	1-249-393-11	CARBON	10	5%	1/4W
R804	1-249-409-11	CARBON	220	5%	1/4W
R805	1-249-409-11	CARBON	220	5%	1/4W
R921	1-249-438-11	CARBON	56K	5%	1/4W
		< VARIABLE RESISTOR >			
RV401	1-225-195-11	RES, VAR (WITH SWITCH) (FADER, POWER OFF/VOLUME/PUSH BALANCE)			
RV402	1-223-603-11	RES, VAR, CARBON 100K/100K (HI-FILTER, PUSH SEEK/MANU)			
		< TUNER >			
TU1	A-3309-002-A	TUNER UNIT			
		< FLAT CABLE >			
W801	1-751-021-21	CABLE, FLAT (28 CORE)			
W802	1-769-356-11	CABLE, FLAT 9P			
		< VIBRATOR >			
X701	1-760-223-11	VIBRATOR, CRYSTAL (4.5MHz)			
		MISCELLANEOUS			
6	1-776-855-21	CORD (WITH CONNECTOR)			
F901	1-532-798-11	FUSE (BLADE TYPE) (AUTO FUSE) 1A			
F902	1-533-331-11	FUSE (BLADE TYPE) (AUTO FUSE) 15A			
HP701	1-543-717-11	HEAD, MAGNETIC (PLAYBACK)			
M701	X-3364-496-1	MOTOR ASSY (REEL/CAPSTAN)			
S701	1-692-502-11	SWITCH, SLIDE (DIRECTION)			
S702	1-692-065-11	SWITCH, LEAF (MUTE)			
S703	1-554-790-21	SWITCH, POWER (TAPE DET)			
		ACCESSORIES & PACKING MATERIALS			
	3-810-601-11	MANUAL, INSTRUCTION (ENGLISH)			
	3-810-601-21	MANUAL, INSTRUCTION (FRENCH) (Canadian)			
	3-810-602-11	MANUAL, INSTRUCTION, INSTALL (ENGLISH, FRENCH)			

Ref. No.	Part No.	Description	Remark
		HARDWARE LIST	
#1	7-621-770-87	SCREW +PTT 2.6X5 (S)	
#2	7-621-770-67	SCREW +PTT 2.6X6 (S)	
#3	7-621-770-XX	SCREW +PTT 2.6X8 (S)	
#4	7-621-555-10	SCREW +K 2X3	
#5	7-621-255-25	SCREW +PTT 2X4 (S)	
#6	7-627-553-88	SCREW, PRECISION +P 2X7	
#7	7-624-102-04	STOP RING 1.5, TYPE -E	
#8	7-624-104-04	STOP RING 2.0, TYPE -E	
#9	7-624-118-01	RING, RETAINING E-2.5	
#10	7-627-553-48	SCREW, PRECISION +P 2X4	
#11	7-621-255-15	SCREW +P 2X3	
#12	7-621-591-00	SCREW +K 2X4	
		MOUNTING HARDWARE	
201	3-575-039-02	NUT (VOL)	
202	3-383-094-71	PLATE, TRIM	
203	3-916-012-01	BRACKET (ND), FITTING ASSIST	
204	3-915-917-01	SCREW (4X12), +T	
205	7-682-560-04	SCREW +P 4X6	
206	X-3363-799-1	KNOB (A) ASSY	



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